



219482.sequence.txt  
SEQUENCE LISTING

<110> Nelson, Edward L.  
Nelson, Peter J.

<120> A VECTOR FOR POLYNUCLEOTIDE VACCINES

<130> 219482

<140> 09/242,202

<141> 1999-11-01

<150> PCT/US97/14306

<151> 1997-08-14

<150> 60/023,931

<151> 1996-08-14

<160> 31

<170> PatentIn version 3.1

<210> 1

<211> 453

<212> DNA

<213> Artificial

<220>

<223> Synthetic

<400> 1  
ggccgcgttg ctggcgtttt tccataggct cgcggccct gacgagcatc acaaaaatcg 60  
acgctcaagt cagagggtggc gaaacccgac aggactataa agataccagg cgtttcccc 120  
tggaagctcc ctctgtgcgt ctctgtttcc gaccctgccg cttaccggat acctctccgc 180  
ctttctccct tcgggaagcg tggcgctttc tcaatgctca cgctgtaggt atctcagttc 240  
gggtgtaggtc gtctgctcca agctgggctg tgtgcacgaa ccccccgttc agcccgaccg 300  
ctgcgcctta tccggtaact atcgtcttga gtccaaccg gtaagacacg acttatcgcc 360  
actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg gtgctacaga 420  
gttcttgaag tggtggccta actacggcta cac 453

<210> 2

<211> 453

<212> DNA

<213> Artificial

<220>

<223> Synthetic

<400> 2  
gtgtagccgt agttaggccca ccacttcaag aactctgtag caccgcctac atacctcgct 60  
ctgctaattc tgttaccagt ggctgctgcc agtggcgata agtcgtgtct taccgggttg 120  
gactcaagac gatagttacc ggataaggcg cagcggctcg gctgaacggg gggttcgtgc 180  
acacagccca gcttggagcg aacgacctac accgaactga gataacctaca ccgtgagcat 240  
tgagaaagcg ccacgcttcc cgaagggaga aaggcggaca ggtatccggt aagcggcagg 300  
gtcggaacag gagagcgac gagggagctt ccagggggaa acgcctggta tctttatagt 360

219482.sequence.txt

cctgtcgggt ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcagggggg 420  
cggagcctat ggaaaaacgc cagcaacgcg gcc 453

<210> 3  
<211> 209  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 3  
gaattctttc ggacttttga aagtgatggt ggtggccgaa ggattcgaac cttcgaagtc 60  
gatgacggca gatttagagt ctgctccctt tggccgctcg ggaacccac cacgggtaat 120  
gcttttactg gcctgctccc ttatcgggaa gcggggcgca tcatatcaaa tgacgcgccg 180  
ctgtaaagtg ttacgttgag aaagaattc 209

<210> 4  
<211> 209  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 4  
gaattctttc tcaacgtaac actttacagc ggcgcgtcat ttgatatgat gcgccccgct 60  
tcccgataag ggagcaggcc agtaaaagca ttaccctgtg tggggttccc gagcggccaa 120  
agggagcaga ctctaaatct gccgtcatcg acttcgaagg ttcgaatcct tccccacca 180  
ccatcacttt caaaagtccg aaagaattc 209

<210> 5  
<211> 6  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 5  
aataaa 6

<210> 6  
<211> 6  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 6  
attaaa 6

<210> 7  
<211> 6

<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 7  
agtaaa

6

<210> 8  
<211> 6  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 8  
aagaac

6

<210> 9  
<211> 6  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 9  
aataca

6

<210> 10  
<211> 227  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 10  
gccttaaggg ccatatggtg agtggatccc ttgaccccag gcgggggatgg ggagacctgt 60  
agtcagagcc cccgggcagc acaggccaat gcccgtcctt cccctgcagg atgagtagtg 120  
agtgcctctc ctggccctgg aagtggccac tccagtgcc accagccttg tcctaataaa 180  
attaagttgc atcattttgt ctgactaggt gtcctctata atattat 227

<210> 11  
<211> 227  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 11  
ataatattat agaggacacc tagtcagaac aaatgatgca acttaatttt attaggacaa 60  
ggctgggtggg cactggagtg gcaacttcca gggccaggag aggcactcac tactcatcct 120  
gcaggggaag gacgggcatt ggcctgtgct gcccgggggc tctgactaca ggtctcccc 180  
atccccgcct ggggtcaagg catccactca ccatatggcc cttaagg 227

<210> 12  
 <211> 252  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 12  
 cctcgggtacc tgccatggcg cggattcttt atcactgata agttggtgga catattatgt 60  
 ttatcagtga taaagtgtca agcatgacaa agttgcagcc gaatacagtg atccgtgccg 120  
 gccctggact gttgaacgag gtcggcgtag acggctctgac gacacgcaaa ctggcggaac 180  
 ggttgggggt gcagcagccg gcgctttact ggcacttcag gaacaagcgg gcgccttaag 240  
 ggccatatgc cg 252

<210> 13  
 <211> 35  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 13  
 cctcgggtacc tgccaccatg gcgcggattc tttat 35

<210> 14  
 <211> 38  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 14  
 cgccatatgg ccttaaggcg cccgcttggt cctgaagt 38

<210> 15  
 <211> 228  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 15  
 gccttaaggg ccatatggtg agtggatgcc ttgaccccag gcggggatgg gggagacctg 60  
 tagtcagagc ccccgggcag cacaggccaa tgcccgtcct tcccctgcag gatgagtagt 120  
 gagtgcctct cctggccctg gaagttgcca ctccagtgcc caccagcctt gtcctaataa 180  
 aattaagttg catcattttg tctgactagg tgcctctat aatattat 228

<210> 16  
 <211> 1425  
 <212> DNA  
 <213> Artificial

## 219482.sequence.txt

&lt;220&gt;

&lt;223&gt; Synthetic

&lt;400&gt; 16

tgccatggcg cggattcttt atcactgata agttggtgga catattatgt ttatcagtga	60
taaagtgtca agcatgacaa agttgcagcc gaatacagtg atccgtgccg gccctggact	120
gttgaacgag gtcggcgtag acggtctgac gacacgcaaa ctggcggaac ggttgggggt	180
gcagcagccg gcgctttact ggcacttcag gaacaagcgg gcgccttaag ggccatatgg	240
tgagtggatg ccttgacccc aggcggggat gggggagacc tgtagtcaga gccccgggc	300
agcacaggcc aatgcccgtc cttcccctgc agtgagtagt gactgcccg gtgggatccc	360
tgtgaccctt cccagtgcc tctcctggcc ctggaagttg ccaactccagt gcccaccagc	420
cttgtcctaa taaaattaag ttgcatcatt ttgtctgact aggtgtcctc tataatatta	480
taagcttgat atcgaattct ttctcaacgt aacactttac agcggcgcggt catttgatat	540
gatgcgcccc gcttcccgat aagggagcag gccagtaaaa gcattacccg tgggtggggtt	600
cccagcggc caaagggagc agactctaaa tctgccgtca tcgacttcga aggttcgaat	660
ccttccccca ccaccatcac tttcaaaagt ccgaaagaat tcctgcagcc cgtgtagccg	720
tagttaggcc accacttcaa gaactctgta gcaccgccta catacctcgc tctgctaatac	780
ctgttaccag tggctgctgc cagtggcgat aagtcgtgtc ttaccgggtt ggactcaaga	840
cgatagttac cgataaggc gcagcggtcg ggctgaacgg ggggttcgtg cacacagccc	900
agcttggagc gaacgaccta caccgaactg agatacctac agcgtgagca ttgagaaagc	960
gccacgcttc ccgaagggag aaaggcggac aggtatccgg taagcggcag ggtcggaaaca	1020
ggagagcgca cgagggagct tccaggggga aacgcctggt atctttatag tcctgtcggg	1080
tttcgccacc tctgacttga gcgtcgattt ttgtgatgct cgtcaggggg gcggagccta	1140
tggaaaaacg ccagcaacgc ggccggggga tccggagagc tcactctaga tgagagagca	1200
gtgagggaga gacagagact cgaatttccg gagctatttc agttttcttt tccgttttgt	1260
gcaatttcac ttatgatacc ggccaatgct tggttgctat tttggaaact ccccttaggg	1320
gatgcccctc aactggccct ataaagggcc agcctgagct gcagaggatt cctgcagagg	1380
atcaagacag cacgtggacc tcgcacagcc tctcccacag gtacc	1425

&lt;210&gt; 17

&lt;211&gt; 719

&lt;212&gt; DNA

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Synthetic

&lt;400&gt; 17

atgagcaagg gcgaggaact gttcactggc gtggtcccaa ttctcgtgga actggatggc	60
gatgtgaatg ggcacaaatt ttctgtcagc ggagaggggtg aaggtgatgc cacatacgga	120
aagctcacc tgaaattcat ctgcaccact ggaaagctcc ctgtgccatg gccaacactg	180

## 219482.sequence.txt

gtcactacct tcacctatgg cgtgcagtgc ttttccagat acccagacca tatgaacgag 240  
catgactttt tcaagagcgc catgcccagag ggctatgtgc aggagagAAC catctttttc 300  
aaagatgacg ggaactacaa gacccgcgct gaagtcaagt tcgaagggtga caccctggtg 360  
aatagaatcg agttgaaggg cattgacttt aaggaagatg gaaacattct cggccacaag 420  
ctggaataca actataactc ccacaatgtg tacatcatgg ccgacaagca aaagaatggc 480  
atcaagggtca acttcaagat cagacacaac attgaggatg gatccgtgca gctggccgac 540  
cattatcaac agaacactcc aatcggcgac cgccctgtgc tcctcccaga caacaattac 600  
ctgtccaccc agtctgccct gtctaaagat cccaacgaaa agagagacca catggtcctg 660  
ctggagtttg tgaccgctgc tgggatcaca catggcatgg acgagctgta caagtgagc 719

<210> 18  
<211> 1911  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 18  
tatgagcaag ggcgaggaac tgttcactgg cgtgggtccca attctcgtgg aactggatgg 60  
cgatgtgaat gggcacaaat tttctgtcag cggagaggggt gaaggatgatg ccacatacgg 120  
aaagctcacc ctgaaattca tctgcaccac tggaagactc cctgtgccat ggccaacact 180  
ggtcactacc ttcacctatg gcgtgcagtg cttttccaga taccagacc atatgaagca 240  
gcatgacttt ttcaagagcg ccatgcccga gggctatgtg caggagagaa ccatcttttt 300  
caaagatgac gggaactaca agacccgcgc tgaagtcaag ttcgaagggtg acaccctggt 360  
gaatagaatc gagttgaagg gcattgactt taaggaagat ggaaacattc tcggccacaa 420  
gctggaatac aactataact ccacaatgt gtacatcatg gccgacaagc aaaagaatgg 480  
catcaagggtc aacttcaaga tcagacacaa cattgaggat ggatccgtgc agctggccga 540  
ccattatcaa cagaacactc caatcggcga cggccctgtg ctctcccag acaaccatta 600  
cctgtccacc cagtctgccc gtctaaagat cccaacgaaa agagagacca catggtcctg 660  
ctggagtttg tgaccgctgc tgggatcaca catggcatgg acgagctgta caagtgagcc 720  
atatggtgag tggatgcctt gaccccaggc ggggatgggg gagacctgta gtcagagccc 780  
ccgggcagca caggccaatg cccgtccttc ccctgcagtg agtagtgact gcccgggtgg 840  
gatccctgtg acccctcccc agtgcctctc ctggccctgg aagttgccac tccagtgcc 900  
accagccttg tcctaataaa attaagttgc atcattttgt ctgactaggt gtcctctata 960  
atattataag cttgatatcg aattctttct caacgtaaca ctttacagcg gcgcgtcatt 1020  
tgatatgatg cgccccgctt cccgataagg gagcaggcca gtaaaagcat taccctggtg 1080  
ggggttcccg agcggccaaa gggagcagac tctaaatctg ccgtcatcga cttcgaagg 1140  
tcgaatcctt cccccaccac catcactttc aaaagtccga aagaattcct gcagcccgtg 1200

219482.sequence.txt

tagccgtagt taggccacca cttcaagaac tctgtagcac cgcctacata cctcgctctg 1260  
 ctaatcctgt taccagtggc tgctgccagt ggcgataagt cgtgtcttac cgggttgagc 1320  
 tcaagacgat agttaccgga taaggcgcag cggtcgggct gaacggggggg ttcgtgcaca 1380  
 cagcccagct tggagcgaac gacctacacc gaactgagat acctacagcg tgagcattga 1440  
 gaaagcgcca cgcttcccga agggagaaaag gcggacaggt atccggtaag cggcagggtc 1500  
 ggaacaggag agcgcacgag ggagcttcca gggggaaacg cctggatatct ttatagtcct 1560  
 gtcgggtttc gccacctctg acttgagcgt cgatttttgt gatgctcgtc aggggggagc 1620  
 agcctatgga aaaacgccag caacgcggcc gggggatccg gagagctcac tctagatgag 1680  
 agagcagtga gggagagaca gagactcgaa tttccggagc tatttcagtt ttcttttccg 1740  
 ttttgtgcaa tttcacttat gataccggcc aatgcttggt tgctattttg gaaactcccc 1800  
 ttaggggatg cccctcaact gggccataa agggccagcc tgagctgcag aggattcctg 1860  
 cagaggatca agacagcacg tggacctcgc acagcctctc ccacaggtac c 1911

<210> 19  
 <211> 69  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 19

Pro Asp Leu Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu Glu Gly  
 1 5 10 15

Ala Cys Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu  
 20 25 30

Asp Asp Lys Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu Thr Ser  
 35 40 45

Ile Ile Ser Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val  
 50 55 60

Val Phe Gly Ile Leu  
 65

<210> 20  
 <211> 287  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 20

Pro Ala Pro Gly Ala Gly Gly Met Val His His Arg His Arg Ser Ser  
 1 5 10 15

Ser Thr Arg Ser Gly Gly Gly Asp Leu Thr Leu Gly Leu Glu Pro Ser  
 20 25 30  
 Glu Glu Glu Ala Pro Arg Ser Pro Leu Ala Pro Ser Glu Gly Ala Gly  
 35 40 45  
 Ser Asp Val Phe Asp Gly Asp Leu Gly Met Gly Ala Ala Lys Gly Leu  
 50 55 60  
 Ser Leu Pro Thr His Asp Pro Ser Pro Leu Gln Arg Tyr Ser Glu Asp  
 65 70 75 80  
 Pro Thr Val Pro Leu Pro Ser Glu Thr Asp Gly Tyr Val Ala Pro Leu  
 85 90 95  
 Thr Cys Ser Pro Gln Pro Glu Tyr Val Asn Gln Pro Asp Val Arg Pro  
 100 105 110  
 Pro Pro Ser Pro Arg Glu Gly Pro Leu Pro Ala Ala Arg Pro Ala Gly  
 115 120 125  
 Ala Thr Leu Glu Arg Pro Lys Thr Leu Ser Pro Gly Lys Asn Gly Val  
 130 135 140  
 Val Lys Asp Val Phe Ala Phe Gly Gly Ala Val Glu Asn Pro Glu Tyr  
 145 150 155 160  
 Leu Thr Pro Gln Gly Thr Cys Ser Pro Gln Pro Glu Tyr Val Asn Gln  
 165 170 175  
 Pro Asp Val Arg Pro Gln Pro Pro Ser Pro Arg Glu Gly Pro Leu Pro  
 180 185 190  
 Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu Arg Pro Lys Leu Ser Pro  
 195 200 205  
 Gly Lys Asn Gly Val Val Lys Asp Val Phe Ala Phe Gly Gly Ala Val  
 210 215 220  
 Glu Asn Pro Glu Tyr Leu Thr Pro Gln Gly Gly Ala Ala Pro Gln Pro  
 225 230 235 240  
 His Pro Pro Pro Ala Phe Ser Pro Ala Phe Asp Asn Leu Tyr Tyr Trp  
 245 250 255  
 Asp Asp Pro Pro Glu Arg Gly Ala Pro Pro Ser Thr Phe Lys Gly Thr  
 260 265 270  
 Pro Thr Ala Glu Asn Pro Glu Tyr Leu Gly Leu Asp Val Pro Val  
 275 280 285

219482.sequence.txt

<210> 21  
<211> 22  
<212> PRT  
<213> Artificial

<220>  
<223> Synthetic

<400> 21

Ile Ile Ser Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val  
1 5 10 15

Val Phe Gly Ile Leu Ile  
20

<210> 22  
<211> 2125  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 22

```
gccacatgg cccctgacct ctcctacatg cccatctgga agtttccaga tgaggagggc 60
gcatgccagc cttgccccat caactgcacc cactcctgtg tggacctgga tgacaagggc 120
tgccccgccg agcagagagc cagccctctg acgtccatca tctctgcggt ggttggcatt 180
ctgctggtcg tggctcttggg ggtggtcttt gggatcctca tcaagcgacg gcagcagaag 240
atcacatgtc cagaccctgc cccgggcgct gggggcatgg tccaccacag gcaccgcagc 300
tcatttacca ggagtggcgg tggggacctg acactagggc tggagccctc tgaagaggag 360
gccccaggt ctccactggc accctccgaa ggggctggct ccgatgtatt tgatggtgac 420
ctgggaatgg gggcagccaa ggggctgcaa agcctcccca cacatgacct cagccctcta 480
cagcgggtaca gtgaggacct cacagtacct ctgccctctg agactgatgg ctacgttgcc 540
cccctgacct gcagccccca gcctgaatat gtgaaccagc cagatgttcg gccccagccc 600
ccttcgcccc gagaggggcc tctgcctgct gcccgacctg ctggtgccac tctggaaagg 660
ccaagactc tctccccagg gaagaatggg gtcgtcaaag acgtttttgc ctttgggggt 720
gccgtggaga accccgagac ttgacacccc agggaggagc tgcccctcag ccccacctc 780
ctcctgcctt cagcccagcc ttcgacaacc tctattactg ggaccaggac ccaccagagc 840
ggggggctcc acccagcacc ttcaaaggga cacctacggc agagaacca gagtacctgg 900
gtctggacgt gccagtgtga agccttaagg gccatatggt gagtggatgc cttgacccca 960
ggcggggatg ggggagacct gtagtcagag cccccgggca gcacaggcca atgcccgtcc 1020
ttcccctgca gtgagtagtg actgcccggg tgggatccct gtgaccctc cccagtgcct 1080
ctcctggccc tggaagtgc cactccagt cccaccagcc ttgtcctaataaaaattaagt 1140
tgcattttt tgtctgacta ggtgtcctct ataataattat aagcttgata tcgaattctt 1200
```

219482.sequence.txt

tctcaacgta acactttaca gcggcgcgtc atttgatatg atgcgccccg cttccccgata	1260
aggggagcagg ccagtaaaaag cattacccgt ggtgggggttc ccgagcggcc aaagggagca	1320
gactctaaat ctgccgtcat cgacttcgaa ggttcgaatc cttccccac caccatcact	1380
ttcaaaagtc cgaaagaatt cctgcagccc gtgtagccgt agttaggcca ccacttcaag	1440
aactctgtag caccgcctac atacctcgt ctgctaatcc tgttaccagt ggctgctgcc	1500
agtggcgata agtcgtgtct taccggggtg gactcaagac gatagttacc ggataaggcg	1560
cagcggtcgg gctgaacggg gggttcgtgc acacagccca gcttgagcg aacgacctac	1620
accgaactga gatacctaca gcgtgagcat tgagaaagcg ccacgcttcc cgaagggaga	1680
aaggcggaca ggtatccggt aagcggcagg gtcggaacag gagagcgcac gagggagctt	1740
ccagggggaa acgcctggtg tctttatagt cctgtcgggt ttcgccacct ctgacttgag	1800
cgtcgatttt tgtgatgctc gtcagggggg cggagcctat ggaaaaacgc cagcaacgcg	1860
gccgggggat ccggagagct cactctagat gagagagcag tgagggagag acagagactc	1920
gaatttccgg agctatttca gttttctttt ccgttttggtg caatttctact tatgataccg	1980
gccaatgctt ggttgctatt ttggaaactc cccttagggg atgcccctca actggcccta	2040
taaagggcca gcctgagctg cagaggattc ctgcagagga tcaagacagc acgtggacct	2100
cgcacagcct ctccacagg tacct	2125

<210> 23  
 <211> 27  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 23	
gtctgccacc atggcctact cccctgc	27

<210> 24  
 <211> 36  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 24	
ttctttggtg acctacctct tcggaattgc cgagtc	36

<210> 25  
 <211> 1242  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 25	
atggaggagc cgcagtcaga tcctagcgtc gagccccctc tgagtcagga aacattttca	60

219482.sequence.txt

gacctatgga aactacttcc tgaaaacaac gttctgtccc ccttgccgtc ccaagcaatg	120
gatgatttga tgctgtcccc ggacgatatt gaacaatggt tcaactgaaga cccaggtcca	180
gatgaagctc ccagaatgcc agaggctgct ccccgctggg cccctgcacc agcagctcct	240
acaccggcgg cccctgcacc agccccctcc tggccccctgt catcttctgt cccttcccag	300
aaaacctacc agggcagcta cggtttccgt ctgggcttct tgcattctgg gacagccaag	360
tctgccacca tggcctactc ccctgctgt gtgacttgca cgtactcccc tgccctcaac	420
aagatgtttt gccaaactggc caagacctgc cctgtgcagc tgtgggttga ttccacaccc	480
ccgcccggca ccccgctccg cgccatggcc atctacaagc agtcacagca catgacggag	540
gttgtagggc gctgccccca ccatgagcgc tgctcagata gcgatggtct ggccccctct	600
cagcgtctta tccgagtggg aggaaatttg cgtgtggagt atttgatga cagaaacact	660
tttcgacata gtgtggtggt gccctatgag ccgcctgagg ttggctctga ctgtaccacc	720
atccactaca actacatgtg taacagttcc tgcattggcg gcatgaaccg gaggcccatc	780
ctcaccatca tcacactgga agactccagt ggtaatctac tgggacggaa cagctttgag	840
gtgcgtgttt gtgcctgtcc tgggagagac cggcgcacag aggaagagaa tctccgcaag	900
aaaggggagc ctcaccacga gctgccccca gggagcacta agcgagcact gccaacaac	960
accagctcct ctccccagcc aaagaagaaa ccactggatg gagaatattt cacccttcag	1020
atccgtgggc gtgagcgctt cgagatgttc tttggtgacc tacctcttcg gaattgccga	1080
gtcttccgag agctgaatga ggccttgga ctcaaggatg cccaggctgg gaaggagcca	1140
ggggggagca gggctcactc cagccacctg aagtccaaaa agggtcagtc tacctcccg	1200
cataaaaaac tcatgttcaa gacagaaggg cctgactcag ac	1242

<210> 26  
 <211> 608  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 26	
ctcgggcccgc gttgctggcg tttttccata ggctccgccc ccctgacgag catcacaaaa	60
atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac caggcgtttc	120
cccctggaag ctccctcgtg cgctctcctg ttccgaccct gccgcttacc ggatacctgt	180
ccgcctttct cccttcggga agcgtggcgc tttctcaatg ctcacgctgt aggtatctca	240
gttcggtgta ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc gttcagccccg	300
accgctgcgc cttatccggt aactatcgtc ttgagtccaa cccggtgaaga cacgacttat	360
cgccactggc agcagccact ggtaacagga ttagcagagc gaggtatgta ggcggtgcta	420
cagagttctt gaagtgggtg cctaactacg gctacactag aaggacagta tttggtatct	480
gcgctctgct gaagccagtt accttcggaa, aaagagttgg tagctcttga tccggcaaac	540

## 219482.sequence.txt

aaaccaccgc tggtagcggg ggtttttttt tttgcaagca gcagattacg cgcagaaaaa 600  
aaggatct 608

<210> 27  
<211> 1547  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic

<400> 27  
ggtacctgcc accatggcgc ggattcttta tctactgataa gttggtggac atattatgtt 60  
tatcagtgat aaagtgtcaa gcatgacaaa gttgcagccg aatacagtga tccgtgccgg 120  
ccctggactg ttgaacgagg tcggcgtaga cggcttgacg acacgcaaac tggcgggaacg 180  
gttgggggtg cagcagccgg cgctttactg gcacttcagg aacaagcggg cgccttaagg 240  
gccatatggt gagtggatgc cttgacccca ggcggggatg ggggagacct gtagtcagag 300  
ccccgggca gcacaggcca atgcccgtcc ttcccctgca ggatgagtag tgagtgcctc 360  
tcctggccct ggaagttgcc actccagtgc ccaccagcct tgtcctaata aaattaagtt 420  
gcatcatttt gtctgactag gtgtcctcta taatattata agcttgatat cgaattcttt 480  
cggacttttg aaagtgatgg tgggtggggga aggattcgaa ccttcgaagt cgatgacggc 540  
agatttagag tctgctccct ttggccgctc gggaacccca ccacgggtaa tgcttttact 600  
ggcctgctcc cttatcggga agcggggcgc atcatatcaa atgacgcgcc gctgtaaagt 660  
gttacgttga gaaagaattc ctgcagcccc cgcggttgct ggcgtttttc cataggctcc 720  
gccccctga cgagcatcac aaaaatcgac gctcaagtca gaggtggcga aacccgacag 780  
gactataaag ataccaggcg tttccccctg gaagctccct cgtgcgctct cctgttccga 840  
ccctgccgct taccggatac ctgtccgcct ttctcccttc gggaagcgtg gcgctttctc 900  
aatgctcacg ctgtaggtat ctgagttcgg tgtaggctcg tcgctccaag ctgggctgtg 960  
tgcacgaacc ccccgttcag cccgaccgct gcgccttatc cggtaactat cgtcttgagt 1020  
ccaacccggg aagacacgac ttatcgccac tggcagcagc cactggtaac aggattagca 1080  
gagcgaggta tgtaggcggg gctacagagt tcttgaagtg gtggcctaac tacggctaca 1140  
ctagaaggac agtatttggt atctgcgctc tgctgaagcc agttaccttc ggaaaaagag 1200  
ttggtagctc ttgatccggc aaacaaacca ccgctggtag cggtggtttt tttgtttgca 1260  
agcagcagat tacgcgcaga aaaaaaggat ctgggggatc cggagagctc actctagatg 1320  
agagagcagt gagggagaga cagagactcg aatttccgga gctatttcag ttttcttttc 1380  
cgttttgtgc aatttcactt atgataccgg ccaatgcttg gttgctatct tggaaactcc 1440  
ccttagggga tgcccctcaa ctggccctat aaagggccag cctgagctgc agaggattcc 1500  
tgcagaggat caagacagca cgtggacctc gcacagcctc tcccaca 1547

## 219482.sequence.txt

<210> 28  
 <211> 1807  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

<400> 28  
 ggtacctgcc accatggcgc ggattcttta tcaactgataa gttggtggac atattatgtt 60  
 tatcagtgat aaagtgtcaa gcatgacaaa gttgcagccg aatacagtga tccgtgccgg 120  
 ccctggactg ttgaacgagg tcggcgtaga cggctctgacg acacgcaaac tggcggaacg 180  
 gttgggggtg cagcagccgg cgctttactg gcacttcagg aacaagcggg cgccttaagg 240  
 gccatatggt gagtggatgc cttgacccca ggcggggatg ggggagacct gtagtcagag 300  
 cccccgggca gcacaggcca atgcccgtcc ttcccctgca ggatgagtag tgagtgcctc 360  
 tcctggccct ggaagttgcc actccagtgcc ccaccagcct tgtcctaata aaattaagtt 420  
 gcatcatttt gtctgactag gtgtcctcta taatattata agcttgatat cgaattcttt 480  
 cggacttttg aaagtgatgg tgggtggggga aggattcgaa ccttcgaagt cgatgacggc 540  
 agatttagag tctgtccct ttggccgctc ggggaaccca ccacgggtaa tgcttttact 600  
 ggcctgctcc cttatcggga agcggggcgc atcatatcaa atgacgcgcc gctgtaaagt 660  
 gttacgttga gaaagaattc ctgcagcccg ccgcgttgct ggcgtttttc cataggctcc 720  
 gccccctga cgagcatcac aaaaatcgac gctcaagtca gaggtggcga aaccgacag 780  
 gactataaag ataccaggcg tttccccctg gaagctccct cgtgcgctct cctgttccga 840  
 ccctgccgct taccggatac ctgtccgcct ttctcccttc ggggaagcgtg gcgctttctc 900  
 aatgctcacg ctgtaggtat ctgagttcgg tgtaggtcgt tcgctccaag ctgggctgtg 960  
 tgcacgaacc ccccgttcag cccgaccgct gcgccttatc cggttaactat cgtcttgagt 1020  
 ccaacccggt aagacacgac ttatcgccac tggcagcagc cactggtaac aggattagca 1080  
 gagcgaggta tgtaggcggt gctacagagt tcttgaagtg gtggcctaac tacggctaca 1140  
 ctagaaggac agtattttggt atctgcgctc tgctgaagcc agttaccttc ggaaaaagag 1200  
 ttggtagctc ttgatccggc aaacaaacca ccgctggtag cggtggtttt tttgtttgca 1260  
 agcagcagat tacgcgcaga aaaaaggat ctgggggatc cggagagctc ccaacgcgtt 1320  
 ggatgcatgg atgagggaaa ggaggtgaaga tctgtaatga ataagcagga actttgaaga 1380  
 ctgagtact cagtgagtaa taaagactca gtgacttctg atcctgtcct aactgccact 1440  
 ccttgttgtc ccaagaaagc ggcttcctgc tctctgagga ggacccttc cctggaaggt 1500  
 aaaactaagg atgtcagcag agaaatTTTT ccaccattgg tgcttggtca aagaggaaac 1560  
 tgatgagctc actctagatg agagagcagt gagggagaga cagagactcg aatttccgga 1620  
 gctatttcag ttttcttttc cgttttgtgc aatttcactt atgataccgg ccaatgcttg 1680  
 gttgctatTT tggaaactcc ccttagggga tgcccctcaa ctggccctat aaagggccag 1740  
 cctgagctgc agaggattcc tgcagaggat caagacagca cgtggacctc gcacagcctc 1800

tcccaca

1807

<210> 29  
 <211> 2308  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Synthetic

&lt;400&gt; 29

```

ggtagcctgccc accatggcga agggcgagga actgttcact ggcgtgggtcc caattctcgt      60
ggaactggat ggcgatgtga atgggcacaa attttctgtc agcggagagg gtgaaggatga      120
tgccacatac ggaaagctca ccctgaaatt catctgcacc actggaaagc tccctgtgcc      180
atggccaaca ctggtcacta ctttcaccta tggcgtgcag tgcttttcca gatacccaga      240
ccatatgaag cagcatgact ttttcaagag cgccatgccc gagggctatg tgcaggagag      300
aaccatcttt ttcaaagatg acgggaacta caagaccgcg gctgaagtca agttcgaagg      360
tgacaccctg gtgaatagaa tcgagttgaa gggcattgac ttttaaggaag atggaaacat      420
tctcgccac aagctggaat acaactataa ctcccacaat gtgtacatca tggccgacaa      480
gcaaaagaat ggcacgaagg tcaacttcaa gatcagacac aacattgagg atggatccgt      540
gcagctggcc gaccattatc aacagaacac tccaatcggc gacggccctg tgctcctccc      600
agacaacat tacctgtcca ccagctctgc cctgtctaaa gatcccaacg aaaagagaga      660
ccacatggtc ctgctggagt ttgtgaccgc tgctgggatc acacatggca tggacgagct      720
gtacaagtga gcgccttaag ggccatatgg tgagtggatg ccttgacccc aggcggggat      780
gggggagacc tgtagtcaga gccccgggc agcacaggcc aatgcccgtc cttcccctgc      840
aggatgagta gtgagtgctt ctcctggccc tggagttgc cactccagtg cccaccagcc      900
ttgtcctaataaaaattaagt tgcattctt tgtctgacta ggtgtcctct ataattattat      960
aagcttgata tcgaattctt tcggactttt gaaagtgatg gtggtggggg aaggattcga     1020
accttcgaag tcgatgacgg cagatttaga gtctgtctccc tttggccgct cgggaacccc     1080
accacgggta atgcttttac tggcctgtct ccttatcggg aagcggggcg catcatatca     1140
aatgacgcgc cgctgtaaag tgttacgttg agaaagaatt cctgcagccc gccgcgttgc     1200
tggcgttttt ccataggctc cgccccctg acgagcatca caaaaatcga cgctcaagtc     1260
agaggtggcg aaacccgaca ggactataaa gataccaggc gtttccccct ggaagctccc     1320
tcgtgcgctc tcctgttccg accctgccgc ttaccggata cctgtccgcc tttctccctt     1380
cgggaagcgt ggcgctttct caatgctcac gctgtaggta tctcagttcg gtgtaggtcg     1440
ttcgctcaa gctgggctgt gtgcacgaac cccccgttca gcccgaccgc tgcgccttat     1500
ccggtacta tcgtcttgag tccaacccgg taagacacga cttatcgcca ctggcagcag     1560
ccactggtaa caggattagc agagcgaggt atgtaggcgg tgctacagag ttcttgaagt     1620
ggtggcctaa ctacggctac actagaagga cagtatttgg tatctgcgct ctgctgaagc     1680

```

219482.sequence.txt

```

cagttacctt cggaaaaaga gttggtagct cttgatccgg caaacaaacc accgctggta 1740
gcggtggttt ttttgtttgc aagcagcaga ttacgcgcag aaaaaaagga tctgggggat 1800
ccggagagct cccaacgcgt tggatgcatg gatgagggaa aggaggtgag atctgtaatg 1860
aataagcagg aactttgaag actcagtgac tcagtgagta ataaagactc agtgacttct 1920
gatcctgtcc taactgccac tccttggtgt cccaagaaaag cggcttcctg ctctctgagg 1980
aggacccctt ccctggaagg taaaactaag gatgtcagca gagaaatttt tccaccattg 2040
gtgcttggtc aaagaggaaa ctgatgagct cactctagat gagagagcag tgagggagag 2100
acagagactc gaattttccgg agctatttca gttttctttt ccgttttgtg caatttcact 2160
tatgataccg gccaatgctt gggttgctatt ttggaaactc cccttagggg atgcccctca 2220
actggcccta taaagggcca gcctgagctg cagaggattc ctgcagagga tcaagacagc 2280
acgtggacct cgcacagcct ctcccaca 2308

```

```

<210> 30
<211> 12
<212> DNA
<213> Artificial

```

```

<220>
<223> Synthetic

```

```

<400> 30
gccaccatgg cc 12

```

```

<210> 31
<211> 11
<212> DNA
<213> Artificial

```

```

<220>
<223> Synthetic

```

```

<400> 31
gccttaaggg c 11

```